

# Green Infrastructure & Detroit

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# What is green infrastructure?

- \* The use of vegetation, soils, and natural processes to manage storm water runoff and create healthier urban environments (vs. traditional, single-purpose, "gray" storm water infrastructure, which uses pipes and sewers to dispose of rainwater)



# Regulation of Storm Water

- \* **Overview of USEPA & MDEQ Regulation of Storm Water**
  - \* The United States Environmental Protection Agency (USEPA) regulates storm water discharges through the National Pollutant Discharge Elimination System (NPDES) permit program of the federal Clean Water Act (CWA)
  - \* Most states are authorized to implement the NPDES Storm Water Program and administer their own storm water permitting programs (MDEQ)

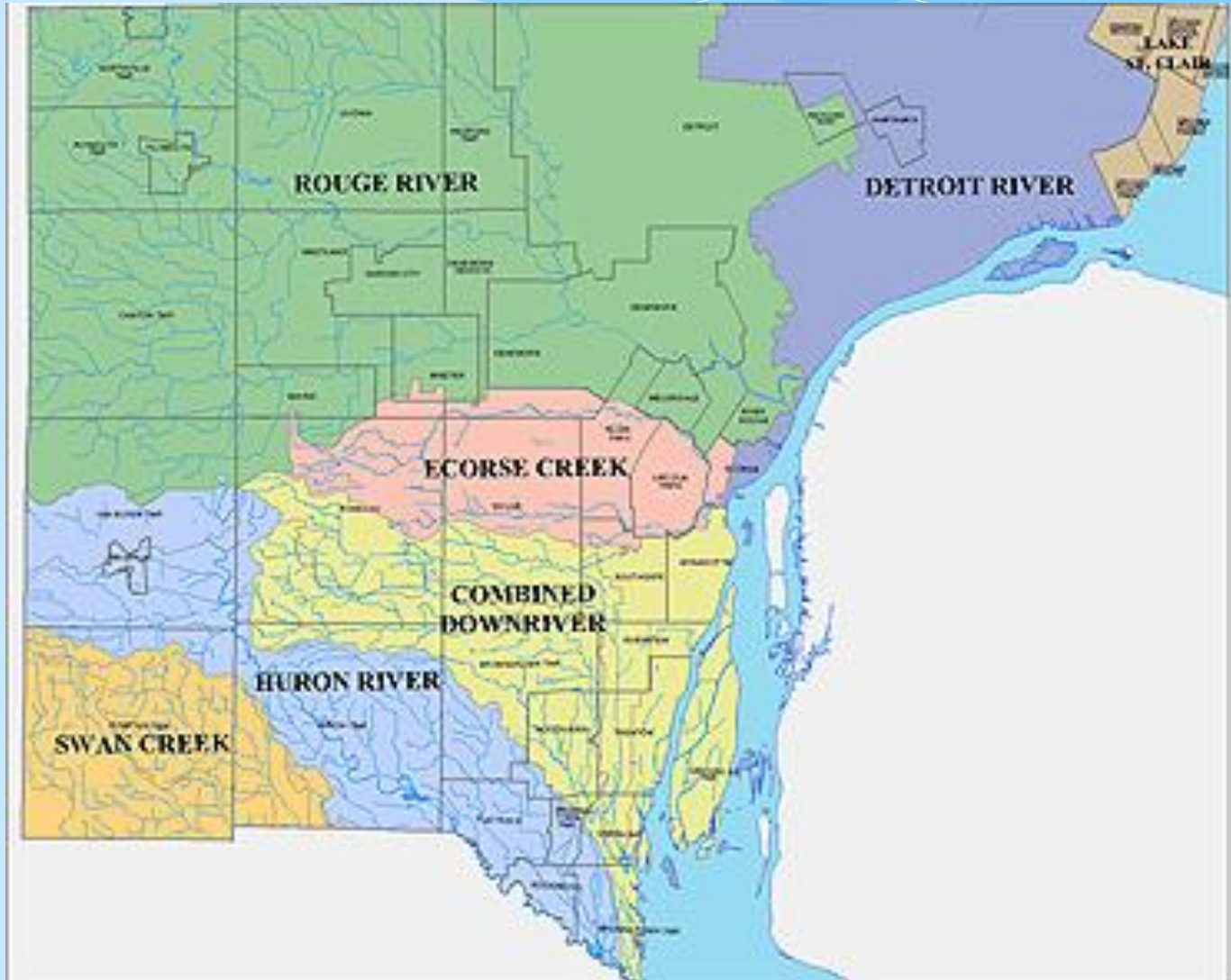
# Wayne County Storm Water

- \* Powers and duties of the drain commissioner, under Michigan law, “shall be performed by a person or persons designated in accordance with the county's charter”
- \* This means that in Wayne County the drain commissioner is an appointed position (vs. most other Michigan counties where elected)
- \* Commissioner appointed by Wayne County CEO



# Wayne County Storm Water, con.

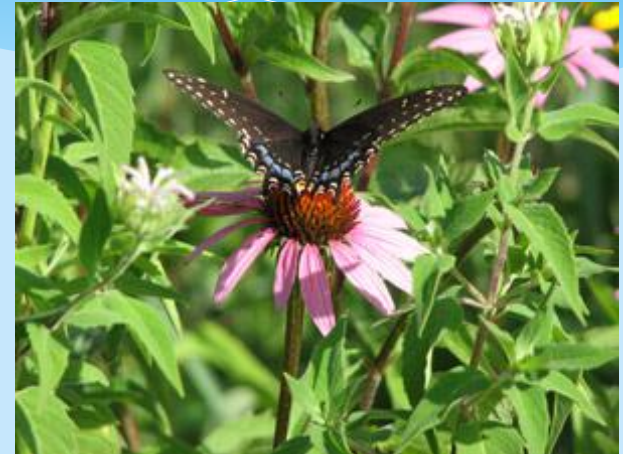
- \* Wayne County's jurisdiction includes 626 square miles, 33 incorporated cities, 10 townships, and 1 incorporated village
- \* There are 7 major watersheds within Wayne County's borders





# Wayne County Storm Water, con.

- \* **Wayne County Storm Water Management Ordinance**
  - \* Adopted in 2006
  - \* Intergovernmental approach
  - \* Many GI friendly storm water initiatives



# Storm Water in Detroit

- \* Detroit does NOT have a storm water ordinance
- \* This is significant because Detroit (via the Detroit Water and Sewerage Department (“DWSD”)) manages the majority of the area’s wastewater treatment plants



# Storm Water in Detroit, con.

- \* **Current state of storm water management in Detroit:**
  - \* Primarily grey storm water infrastructure (storm water runoff conveyed through combined sewer system)
  - \* Storm Water Management Program Plan (“SWMPP”) - “maximum extent practicable”
  - \* DWSD and SEMCOG “Alternative Rouge River CSO Control Program,” including GI Program



# Storm Water in Detroit, con.

**Table 1. CSO Projects for the Rouge and Detroit Rivers**

**Detroit's CSO Projects built or under construction by 2008:**

Hubbell-Southfield Basin (1995)	\$58.9 M	Rouge
Puritan-Fenkell Basin (1996)	\$18.1 M	Rouge
7 Mile Basin (1996)	\$14.9 M	Rouge
In System Storage Gates (1996)	\$3.4 M	Rouge
St. Aubin S&D Facility (1999)	\$19.8 M	Detroit
Leib S&D Facility (1999)	\$33.4 M	Detroit
WWTP Expansion (2000)	\$101.2 M	Rouge/ Detroit
Conner Creek Basin (2001)	\$201.4 M	Detroit
In System Storage Devices (2002)	\$30.8 M	Rouge/ Detroit
Baby Creek S&D Facility (2003)	\$76.1 M	Rouge
Belle Isle Basin (2005)	\$16.1 M	Detroit
Oakwood Basin & Pump Station (2007)	\$168.7 M	Rouge
Oakwood Sewer Improvements #1 (2008)	\$15.0 M	Rouge
<b>Total Cost of Pre-2008 Facilities</b>	<b>\$758 M</b>	

**2009 Rouge River capital improvement projects:**

Upper Rouge CSO Storage Tunnel (terminated)	\$880 M	
New WWTP Outfall (DRO-2) (terminated)	\$300 M	
Segment 2 of Oakwood Sewers	\$12 M	
<b>Subtotal for 2009 Facilities</b>	<b>\$1,192 M</b>	
<b>Grand Total</b>	<b>\$1,950 M</b>	

# Storm Water in Detroit, con.

- \* **“Alternative Rouge River CSO Control Program” Overview**

- \* In place since about 2011
- \* “25-year phased plan that focuses on “Green Infrastructure” solutions along with “right-sized” conventional CSO control facilities (“Grey” projects)
- \* Replaced old CSO control program that was primarily grey infrastructure, now includes GI Program
- \* GI projects:
  - \* Disconnection of residential and municipal downspouts
  - \* Demolish and remove vacant structures and replace with pervious land cover
  - \* Use bioswales and tree trenches along roadways and parking lots to intercept runoff and reduce storm water inputs
  - \* Plant trees for uptake and evapotranspiration along roadways and open spaces
  - \* Implement activities on municipally-owned properties, focusing on managing storm water runoff in under-utilized parks

# Storm Water in Detroit, con.

- \* **“GLELC’s Role in DWSD’s GI Program:**

- \* Coalition of environmental groups
- \* Working relationship with MDEQ and DWSD
- \* Contributed to changes made in most recent DWSD permit renewal on issues such as timetabling/milestones and commitment to funding



# Storm Water in Detroit, con.

- \* **Results of DWSD GI Program thus far:**

- \* 2011-2012 highlights:

- \* 1,591 trees planted along streets
    - \* 252 demolished buildings in CSO control area
    - \* Workshops and training on downspout disconnection

- \* 2012-2013 highlights:

- \* 1,463 trees planted along streets
    - \* Planned demolition of approx. 165 properties
    - \* Planned restoration of approx. 10 vacant lots (re-greening)
    - \* Continued downspout disconnection efforts



# Storm Water in Detroit, con.

- \* Continuing barriers to GI in Detroit, Detroit's unique position:
  - \* Bankruptcy/finance problems
  - \* Emergency manager
  - \* Evolving status of DWSD



# Storm Water in Detroit

- \* **GI Ideas and Solutions for Detroit: Ordinance Ideas**
  - \* Revise the City Code and Zoning Ordinances
    - \* Problematic Ordinances - Parking Structures
  - \* Create own or adopt a model storm water ordinance that allows city to work around existing code
    - \* Wayne County example
    - \* Grand Rapids Model Storm Water Ordinance

# Storm Water in Detroit

- \* **GI Ideas and Solutions for Detroit: Develop and Commit to Visible GI Initiatives**
  - \* Detroit Green Roof Initiative

## **Detroit Green Roof Initiative**

Support the creation of a Detroit Green Roof Initiative. Currently, there is a proposed project ready to be implemented. This is a public-private sponsored demonstration project that illustrates the benefits of green roofs in stormwater management (absorbing 60-80% of the stormwater that falls on the roof). The subject of the project is greening a two-acre Old Hudson's site over the current Premier Parking Garage in Downtown Detroit (proposed and designed by the Urban Design Unit of the City of Detroit Planning & Development Department in 2009).



*Greening the Old Hudson's Site, Woodward Avenue, Detroit  
Source: Urban Design, P&DD, City of Detroit; Google Earth*

# Storm Water in Detroit

- \* **GI Ideas and Solutions for Detroit: Use Likely Reorganization of DWSD to Promote GI**
  - \* Detroit's green leaders need to pay attention to the future of DWSD



**Thank you!**